

## Water Conservation Initiatives: Are They Working?

The commission has created a water use database which will be used to project future water demand and evaluate the effectiveness of water conservation programs which, based on preliminary analyses of the data, seem to be having a positive impact.

The data, for the period 1990 through 1996, also will be helpful in putting together a profile of water use in the basin and developing consumptive use estimates.

The database includes the following information:

- monthly ground water and surface water withdrawals
- location of each withdrawal (latitude/longitude)
- use categories (public water supply, industry, power, golf courses; and commercial, institutional, and agricultural as available)

The data currently are undergoing quality control checks and are being entered into a Geographic Information System (GIS) format.

The Delaware River Basin was a source of water supply for approximately 17.5 million people in 1996. This includes 7.5 million people living within the basin's boundaries and 10 million living outside the basin — mostly either in New York City or northeast New Jersey.

About 40 percent of the basin's potable water is exported to the city and the Garden State through underground aqueducts and the Delaware and Raritan (D&R) Canal.

The volume of potable water withdrawn from the basin ranged from some 688,000 million gallons in 1990 to 637,000 million gallons in 1996. This represents a 5.2 percent decrease over the seven years, a period during which the basin's population increased by two percent.

This trend serves as a strong indicator that water conservation programs, like the ones administered by the commission, are working.

Since the late 1980's, the commission has adopted regulations that:

- require leak detection and repair programs for in-basin, public water suppliers in an effort to locate unaccounted-for water projected at some 240 million gallons a day when the regulation was enacted back in 1988. Estimated treatment and delivery costs for that lost water: \$80 million a year.
- require the metering of major, in-basin, public water supply systems at the customer end of the pipe with all water bills based on metered usage instead of a flat, periodic rate for an unlimited supply. Thus, water conservation became a pocketbook issue with a compelling economic incentive: save water, save money.
- establish water conservation performance standards for such plumbing fixtures and fittings as toilets, urinals, faucets, and shower heads that are installed during new construction or major renovations. Basin-wide savings of some 110 million gallons a day are projected by the year 2020 as a result of switching to these water-saving devices.
- promote the adoption of retail water pricing to encourage conservation. These rate structures provide incentives to customers to reduce average or peak water use. Such pricing is characterized by rates based on metered usage and may include seasonal rates or excess-use surcharges to reduce water use during peak periods like summer.
- require large water companies to submit conservation plans to the commission with applications for new or expanded water withdrawals.

### Population Within the Basin Versus Water Withdrawals 1990 – 1996 (preliminary)

|                               | POPULATION<br>% CHANGE | WITHDRAWAL<br>% CHANGE |
|-------------------------------|------------------------|------------------------|
| <b>Pennsylvania</b>           | <b>+1.2%</b>           | <b>-7%</b>             |
| <b>Delaware</b>               | <b>+5.7%</b>           | <b>-8.6%</b>           |
| <b>New Jersey</b>             | <b>+3%</b>             | <b>+2%</b>             |
| <b>New York State</b>         | <b>+0.5%</b>           | <b>+6%</b>             |
| <b>Four State<br/>Average</b> | <b>+2.0%</b>           | <b>-5.2%</b>           |

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Water conservation also saves money by reducing or delaying the need for developing new water supply systems which consist of costly infrastructure like treatment plants, pumping stations, reservoirs, and distribution systems.

Conservation has a stabilizing effect on the rate of water withdrawals which helps to maintain flows in rivers and streams and reduce the potential for over-pumping of ground water.

Data recently published by the U.S. Environmental Protection Agency show that water and wastewater utilities will need to invest over \$277 billion to protect public health and accommodate growth over the next 20 years. The commission estimates that its regulation governing the use of low flow toilets alone would defer about \$500 million of those capital costs within the basin.

In order to meet the needs of present and future populations and ensure that ecosystems are protected, water must be sustainable and renewable. Sound water resources management, emphasizing efficient use of water, is essential to achieve these objectives. Efficient water use can have major environmental, public health, and economic benefits by helping to improve water quality, maintain aquatic ecosystems, and protect drinking water sources.

It should be noted that the water use information that is reported to the commission and contained in the new database does not include withdrawals under 100,000 gallons per day (gpd) for New Jersey, New York, and Pennsylvania (outside the Ground Water Protected Area), 10,000 gpd inside the Protected Area, and 50,000 gpd for Delaware. (For more information on the Protected Area see page 20)

Despite this, DRBC staff believes that over 90 percent of the water withdrawals are accounted for in the current database, a description of which can be located on the commission's web site ([www.drbc.net](http://www.drbc.net)).

## ***Water Savings in the Big Apple***

New York City, which draws about half its water from the Delaware River Basin, has aggressive water conservation programs in place that have shown some pretty impressive results.

Wastewater flows to the city's 14 treatment plants have been reduced by roughly 16 percent over six years and all the plants are now operating under their design capacity.

Water consumption in the city has dropped from 1,400 million gallons a day (mgd) in 1990 to 1,200 mgd in 1997; per capita consumption dropped from 204 gallons per day (gpd) to 164 gpd during the same period.

Locks have been installed on one third of the city fire hydrants, resulting in a 68 percent reduction in open hydrant complaints.

A leak detection program has resulted in an 80 percent reduction in measured losses.

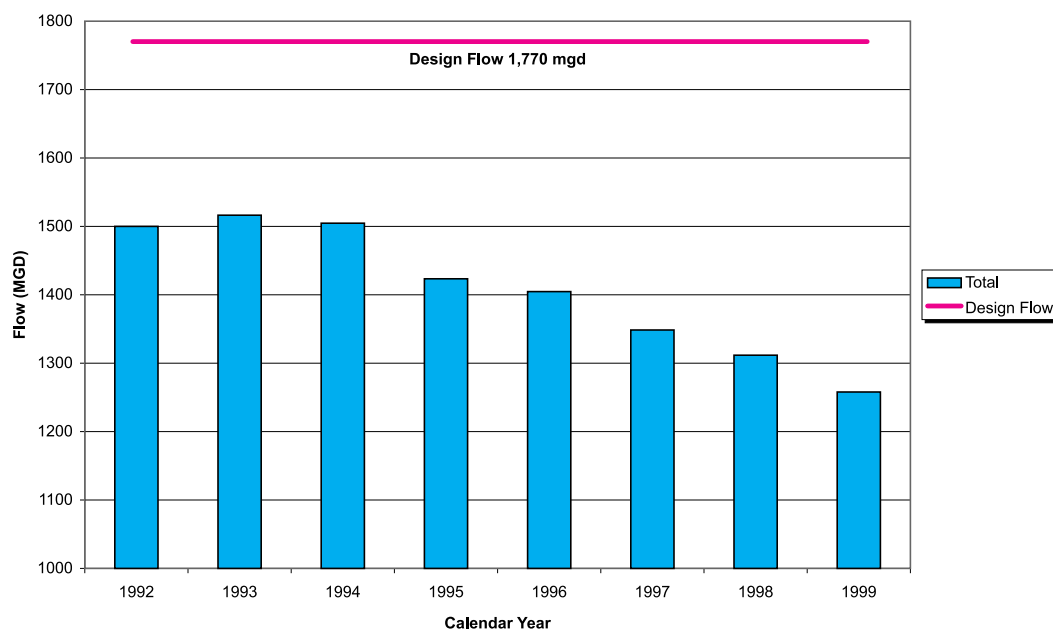
A low flow toilet rebate program is credited with saving between 70 to 90 mgd.

The conservation initiatives, which began in the late 1980s, also have focused on stopping leaks in abandoned buildings and replacing old, leaky plumbing fixtures and fittings in multi-family dwellings with new water saving devices.

A metering program, started in 1988, is still underway. When all of the meters have been installed and all water customers are billed on metered usage, additional conservation gains can be expected.

The city also is looking into a clothes washer incentive program that would provide rebates to residential and commercial users who switch to

New York City Dry Weather Wastewater Flows (MGD)



Source: New York City Department of Environmental Protection, July 2000

front loading machines. These washers have the potential to reduce water usage by up to 40 percent per load.

The clothes washer initiative was endorsed by the New York City Department of Environmental Protection's Nitrogen Technical Advisory Committee which has found that water conservation provides numerous benefits for nitrogen removal at the city's wastewater treatment plants.

To reduce the cost of the front-loading units (which normally are more expensive than top-loaders), the committee recommends that the city consider the bulk purchase of the machines and the selection of retailers to market and distribute them. (Austin, Tex., through a recent bulk purchase, was able to reduce the price of the front loading models from \$799 to \$599.)

It is estimated by the committee that a fifty percent change-out in clothes washers might net an additional 15 to 20 mgd in water savings citywide.

One of the committee's seven members is Dr. Jeffrey Featherstone, the DRBC's deputy executive director.

## Water: At What Price?

In some countries water is not a sustainable and renewable commodity.

People living in many Mideast towns and villages, for instance, may have water only one or two days a week during droughts. When water is available the pressure is so low that residents living at higher elevations have to trek down to lower ones to fetch it or have it delivered by tanker.

Stacks of dirty dishes sit unwashed for days. Toilets go un-flushed.

The World Commission for Water for the 21st Century estimates that some 1.2 billion people have no access to clean water and the poorest people in developing countries pay up to 100 times more for water than do the wealthier folks. The problem is that municipal pipelines invariably reach the richest customers first despite the fact they often are built with funds earmarked for the poor, who end up paying sky high prices to vendors selling jug water.

